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ART IV.—*Fruiting of "Blackfellow's Bread" (Polyporus Mylittae, Cooke).*

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As is now well known, "Blackfellow's Bread" is the subterranean sclerotium of a *Polyporus*, whose mycelium grows, possibly partly saprophytically and partly parasitically, on the roots of forest trees. The sclerotia, which often attain a considerable size, and may weigh 10 to 20 lbs., simply represent a large store, chiefly of carbo-hydrate material, mainly in the form of fungal cellulose stored up for the nourishment of the large Polyporus-like sporophores which are formed under special conditions.

The sporophore, or fruiting body, appears to have been first observed by Mr. Tisdall,[1] but its importance in determining the classification of the fungus was not determined until a specimen reached the mycologist Cooke, who, in a paper issued in the Gardener's Chronicle for 1892, under the title, "A Mystery Solved," placed it under the genus *Polyporus*. Fruiting specimens were subsequently described in detail by Mr. R. T. Baker,[2] and by Mr. D. McAlpine.[3] The last-named gentleman gives photographs of the fruit and also of the spores.

For some time I have attempted to obtain fruits of the fungus by keeping the sclerotes buried in moist soil in a greenhouse for long periods of time, but without success. The cause of the non-formation of the fruiting bodies could not be determined until it was found that, as in the case of certain other *Polypori*, the formative stimulus of light is necessary to induce the formation of sporophores. For instance, a large specimen weighing, originally, over 12 lbs., was kept buried in soil in a pot for 2½ years. At the end of that time, although somewhat shrivelled and slightly rotted in parts, it was otherwise unaltered. On exposing it to light in the same greenhouse in which

1 Victorian Naturalist, 1885 and 1886, p. 19.
2 Proc. Linn. Soc. New South Wales, 1902.
3 Journal of Agriculture of Victoria, 1903, vol. ii., p. 1017

the pot had remained the whole of the time, within two days white pustules appeared, these developing from cracks on the side and upper surface af the sclerote. In four days one of these developed into a large *Polyporus* fructification, 5 inches in diameter, with a somewhat irregular margin and a short stalk, and two additional small outbreaks of pustules developed later to similar fructifications. On a darkened portion and on the under surface, no development of fruits took place. The power of developing a hymenium is not confined to the surface of a sclerote, for spore-bearing tubes may develop directly from the central portion of the fruit when this is cut in two. Mr. McAlpine noted that on the under side of a slice, groups of tubes formed on the surface, without any properly stalked fruit body being produced, whereas on the upper surface, a normal sporophore appeared. He concluded that the former peculiarity was due to the fact that on the under surface, the formation of a sporophore was physically impossible. This is, of course, not the case, for many fungi will develop sporophores when the rudiment starts in the inverted position, the stalk usually bending so that the pileus or cap is developed in the normal position. Similarly, the sporophores of *Polyporus* are able to develop against far greater pressures than would be represented by the weight of a slice of the sclerote. Actual experiments showed that the same formation of groups of sessile tubes, instead of a stalked sporophore, took place on slices placed with their cut surface vertical, where there was no physical resistance to the formation of a stalked sporophore. Evidently, therefore, neither the influence of gravity nor that of light can be responsible for the non-formation of the usual regular stalked sporophore in such cases. Apparently, cutting the sclerote into slices produces a profound disturbance in the morphogeny of the sporophore, which usually breaks through cracks in the outer surface. The removal of the mutual pressures exercised by the central tissues at the cut surface as well as the cessation of their reciprocal formative or inhibitory influence on the free surface at least, probably leaves each part of the exposed surface free to exercise its spore forming tendency in the most direct possible manner, which is by the immediate formation of hymenel tubes without the intervention of a sporophore.